ROAD DELAY SOLUTIONS

# Proposed Warehouse Facilities

## Proposed Lots 5 and 6

## Horsley Drive Business Park

## Traffic Impact Report

Prepared for...

australand

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# ABSTRACT

*Road Delay Solutions Pty Ltd* has been engaged by *Australand Commercial and Industrial Division* to undertake investigation into the traffic implications associated with the Development Application (DA) for a warehouse and distribution complex within the Horsley Drive Business Park (HDBP) being proposed Lots 5 and 6 (refer to *Figure 1*).

The site occupying a total area of 57,334m$^2$ (5.7334ha), situated within the region identified under state planning as the *Western Sydney Parklands* catchment, is generally bounded by Cowpasture Road to the east, The Horsley Drive to the south and vacant lands to the west and north. The proposed development involves the construction of…

- *A warehouse and distribution facility with a total floor area of 15,427m$^2$,*
- *A dock office of 116m$^2$, and*
- *Two storey office space of 3,132m$^2$.*

No retail activities are envisaged for site at this time.

The development footprint for the proposed warehouses provides car parking for 250 passenger vehicles while heavy vehicle layover is catered for within the hardstand apron, to the east of the site.

In accordance with the administration of the *State Environment Planning Policy (Infrastructure) 2007*, given the development exceeds 10,000m$^2$ the consent authority must…

- *Provide written notice to the RMS within 7 days of lodgement of the DA,*
- *Respond to any RMS submission within 21 days,*
- *Consider accessibility, traffic and pedestrian safety and mobility, road congestion and parking demands of the development,*
- *Effect measures to reduce the use of private passenger vehicles, and*
- *Provide a written copy of the determination of the application to the RMS within 7 days of said determination.*

# PLANNING

As part of the approval process, this *Traffic Impact Assessment* has been undertaken to address issues associated with the environmental assessment requirements of the accompanying distribution warehouse DA.

Aspects of the environmental assessment requirements identified and to be addressed in this DA submission, include…

- *Strategic transport policy matters,*
- *Opportunities to minimise traffic on sensitive road frontages,*
- *Efficiency of new roads, including proposed access and circulation and car parking provisions,*
- *Intersection operational performance assessment and any necessary mitigation measures,*
- *Review of the relevant sight distances,*
- *Emergency and service vehicle accessibility,*
- *Integration with proposed infrastructure on the wider road network, as well as detailing the opportunities and constraints offered by alternative vehicular access points,*
- *Measures to promote public transport usage and influence mode share,*
- *Pedestrian and bicycle provisions, and*
- *Initiatives to reduce the reliance on private vehicle usage.*

NSW Government Planning Strategies, pertaining to this development, have been articulated in the following documents and have served as a reference in preparing this report…

- *Secretary's Environmental Assessment Requirements (SEARS),*
- *Metropolitan Strategy 'City of Cities', (2005),*
- *Action for Transport 2010 – an Integrated Transport Plan for Sydney,*
- *Shaping our Cities (1999).*
- *Shaping Western Sydney (1998),*
- *Action for Air (1999), and*
- *Draft SEPP 66 –'Integration of Landuse and Transport'.*

The Fairfield City Council Planning controls and policies applied in this application are…

- *Fairfield Local Environmental Plan 2013, and*
- *Fairfield City-Wide Development Control Plan, Chapter 9 Industrial Development, 2013,*

# LOCATION

Located within the *Western Sydney Parklands* catchment, Wetherill Park, and identified as proposed Lots 5 and 6 occupying a total area of 57,334m$^2$ (5.7334ha), as indicated in *Figure 2*, the site is generally bounded by Cowpasture Road to the east, The Horsley Drive to the south and vacant lands to the west and north.

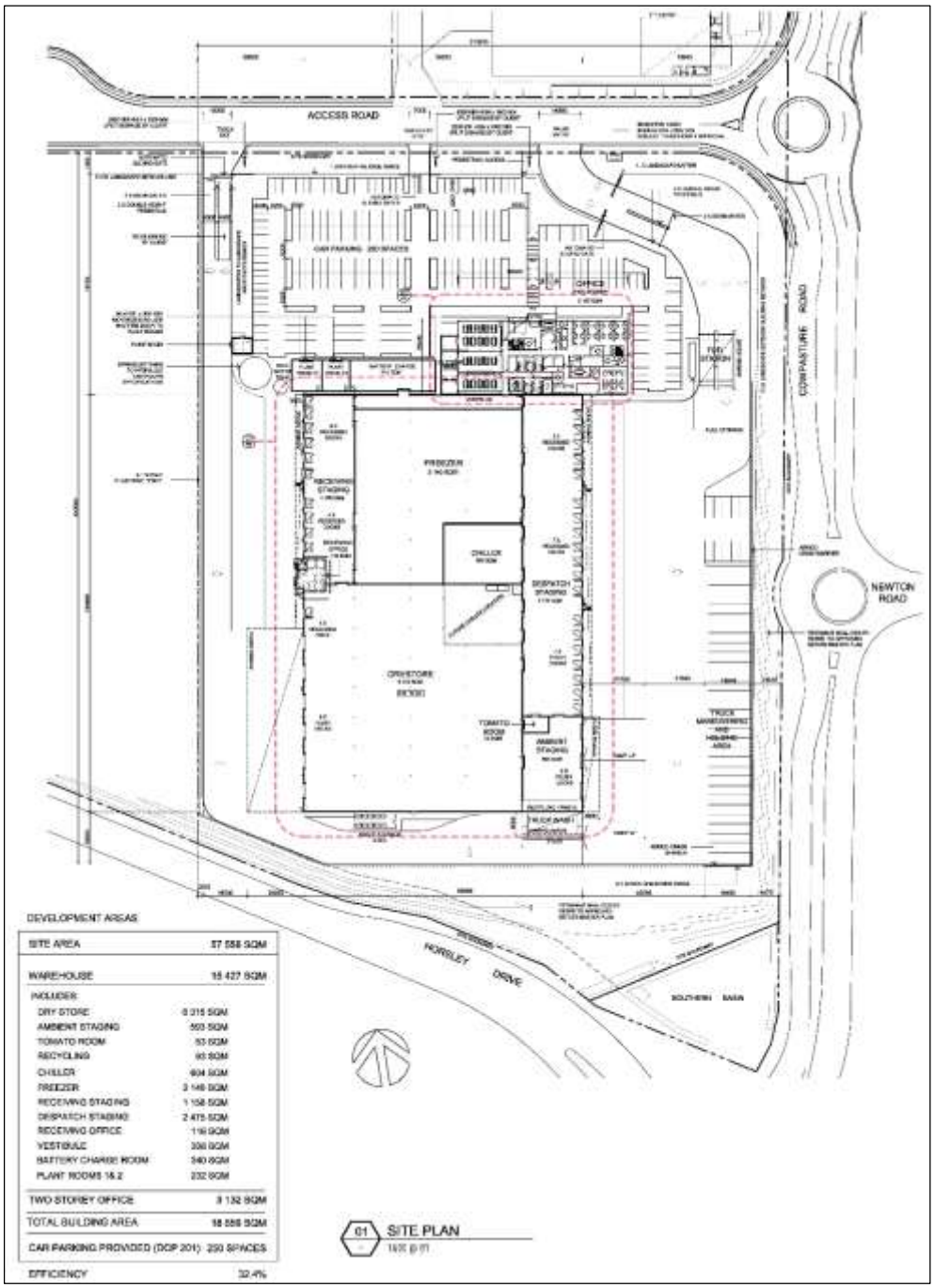
**Figure 1: Location Context**


*Source: Google Earth 2014*

The HDBP is situated approximately…

- *2.4 km of the M7/The Horsley Drive Interchange,*
- *7 km from the M4/M7 interchange,*
- *9 km from the M4/Prospect Highway Interchange, and*
- *18 km's from the junction of the M5 and M7 Motorways, providing business with good connectivity with the Sydney CBD, Port Botany and other significant Regional Centres.*

**Figure 2: Proposed Site Layout**




*Source: AUSTRALAND Commercial and Industrial Division, 2015*

**Figure 3: The Horsley Drive Business Park Anticipated Full Development**

# THE DEVELOPMENT

A detailed description of the proposed development is provided in a separate submission, prepared by Australand. The development footprint and proposed structure of the site is presented in *Figure 4*.

The development, being the construction of a warehouse and distribution facilities, consists of…

- *A total site area of 57,334m$^2$ (5.7334ha),*
- *A warehouse floor area of 15,427m$^2$,*
- *A dock office of 116m$^2$,*
- *A two storey office with a total floor area of 3,132 m$^2$, and*
- *A site occupation rate, excluding awnings of 32.4%.*

The site is intended for general retail commodity warehousing and distribution.

No manufacturing or 'direct to public' retail sale operations are envisaged on the site at this time, with acceptance sought for 24 hour, seven (7) days a week operation.

It is envisaged that Warehouse and Offices will cater for some 180.

The proposed warehouse affords employees and visitors access to 250 parking spaces, inclusive of two (2) dedicated disabled spaces, within a secure car park facility to the north of the site.

Access to the 250 passenger car parking spaces is proposed via a gated driveway from the internal Access Road running parallel to the northern site boundary, as shown in *Figure 4*.

Separate, dedicated, heavy vehicle entry and exit driveways have been designed to accommodate the intended ingress/egress of vehicle classes 1 through 10 (refer to *Figure 5* for vehicle classifications and the section entitled *HEAVY VEHICLE ACCESS in this report*).

Heavy vehicle entry is proposed from the internal roadway running along the northern boundary of the site and thence via a driveway, some 65m west of the proposed roundabout on Cowpasture Road.

Egress is proposed from the hardstand area and driveway, intersecting the cul-de-sac head on the internal access road, some 188m to the west of the proposed roundabout on Cowpasture Road.

**Figure 4: The Development**


*Source: AUSTRALAND Commercial and Industrial Division, 2015*

**Figure 5: AUSTROADS Vehicle Classification Chart**

| CLASS | LIGHT VEHICLES |
|---|---|
| 1 | SHORT<br>Car, Van, Wagon, 4WD,<br>Utility, Bicycle, Motorcycle |
| 2 | SHORT - TOWING<br>Trailer, Caravan, Boat |
| | HEAVY VEHICLES |
| 3 | TWO AXLE TRUCK OR BUS<br>*2 axles |
| 4 | THREE AXLE TRUCK OR BUS<br>*3 axles, 2 axle groups |
| 5 | FOUR (or FIVE) AXLE TRUCK<br>*4 (5) axles, 2 axle groups |
| 6 | THREE AXLE ARTICULATED<br>*3 axles, 3 axle groups |
| 7 | FOUR AXLE ARTICULATED<br>*4 axles, 3 or 4 axle groups |
| 8 | FIVE AXLE ARTICULATED<br>*5 axles, 3+ axle groups |
| 9 | SIX AXLE ARTICULATED<br>*6 axles, 3+ axle groups or 7+ axles, 3 axle groups |
| | LONG VEHICLES AND ROAD TRAINS |
| 10 | B DOUBLE or HEAVY TRUCK and TRAILER<br>*7+ axles, 4 axle groups |
| 11 | DOUBLE ROAD TRAIN<br>*7+ axles, 5 or 6 axle groups |
| 12 | TRIPLE ROAD TRAIN<br>*7+ axles, 7+ axle groups |

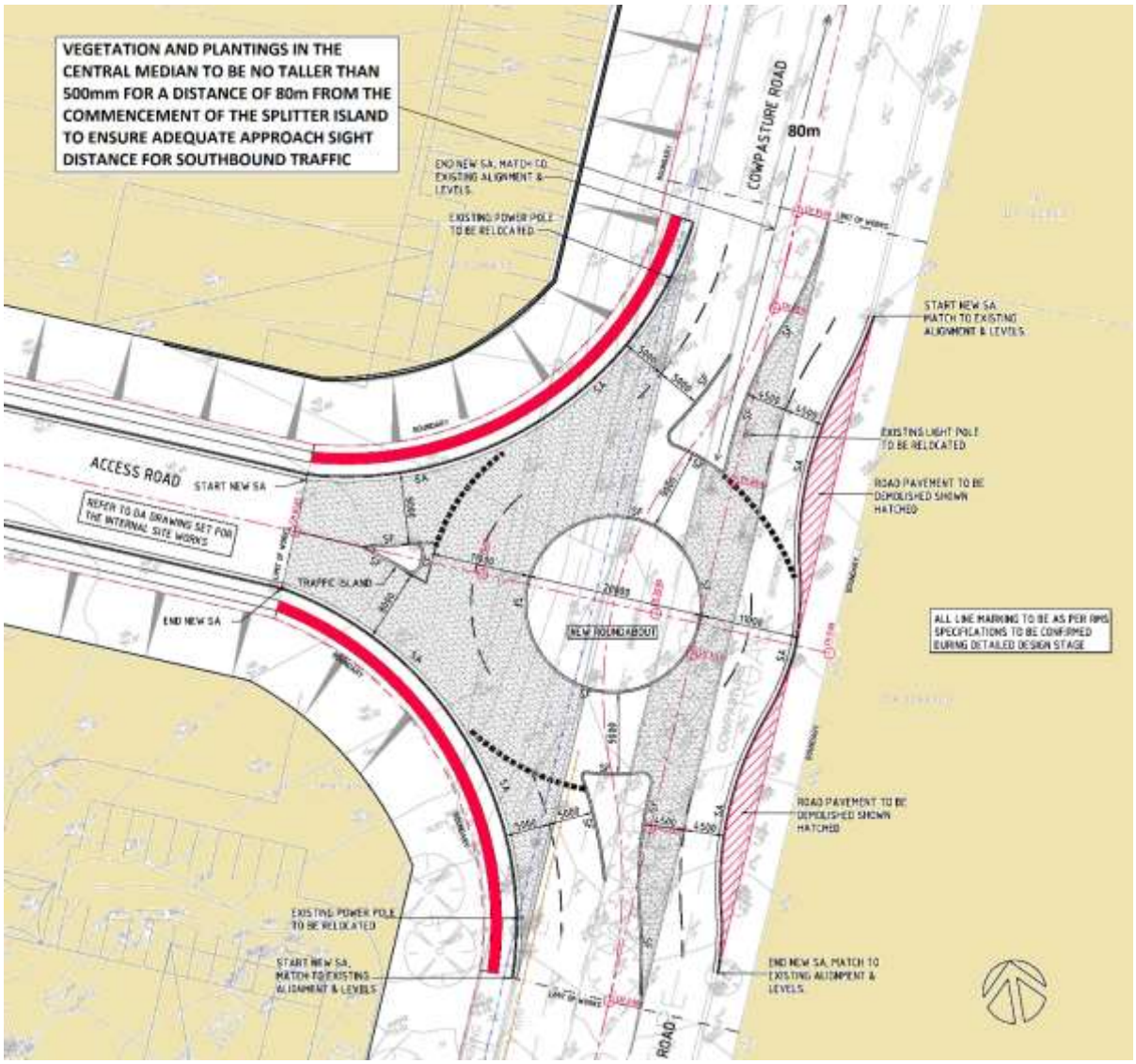
# ROAD NETWORK

The HDBP is located within the region known as the *Western Sydney Parklands*, to the east of the M7 Motorway, as shown on *Figure 3*.

The M7 Motorway, The Horsley Drive and Cowpasture Road provide the major arterial links to and from the the business park, supplemented by the M4 Motorway, to the north.

Access to the HDBP is proposed via a dual lane circulating roundabout on Cowpasture Road, as shown in *Figure 6*.

**Figure 6: Proposed Roundabout Access on Cowpasture Road**



The horizontal and vertical sight lines, at the proposed roundabout, have been assessed, on site, and found to be adequate and in accordance with the required *RMS* guidelines, as outlined following.

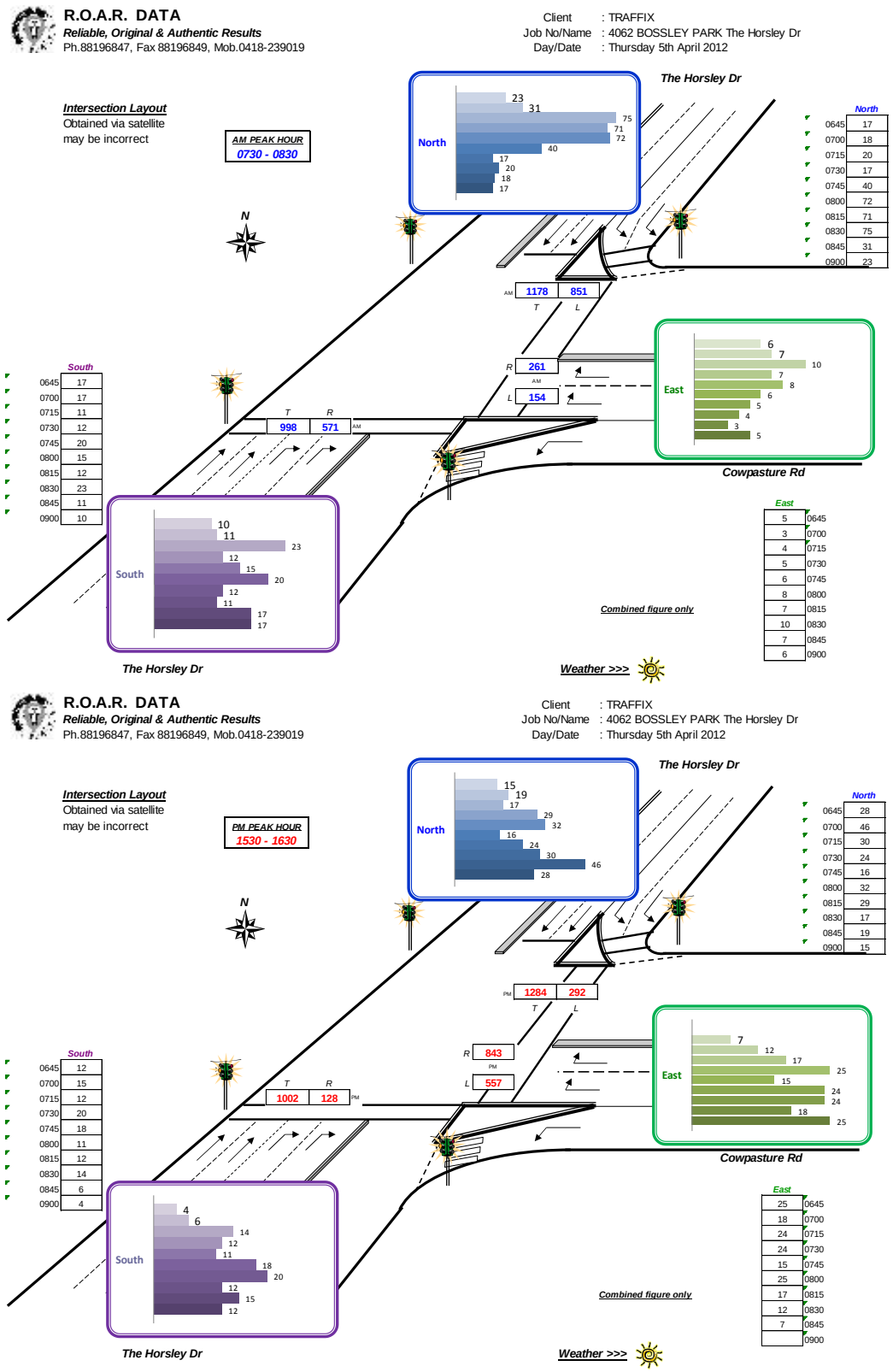
The proposed downward gradient of -3.8%, southbound in Cowpasture Road, combined with the proposed upward gradient of 3.1% eastbound in the access road approach from the HDBP, motorists are able to achieve an approach sight distance (ASD), from the access road, in excess of 50m, an entering sight distance (ESD) in excess of 20m and a safe intersection Sight Distance (SISD) on Cowpasture Road in excess of 120m, in accordance with the *RMS Guide to Road Design – Section 4 Intersections at Grade*. It has been determined that no structures or vegetation greater than 500mm tall should be located within the central median of the Cowpasture Road southbound approach, for a distance of 80m, prior to the roundabout holding line, to achieve the desired sight distances.

Cowpasture Road exhibits satisfactory deflection with the approach and exit from the roundabout enabling a curved travel path, no greater than 100m radius, allowing vehicles to travel in tandem, exclusively within their respective lanes.

The heavy vehicle movements within the roundabout have been assessed in accordance with AUSTROADS guidelines and found to be satisfactory. The turning swept paths within the proposed roundabout are presented in *Appendix B*.

The existing turn movements, to which the vehicle generation from the proposed HDBP, are presented in *Figure 7*.

## Figure 7: Year 2012 Existing Vehicle Movements




*Source: Horsley Drive Business Park TIA for a Part 4 Concept Plan Application' - Traffix, May 2012*

**Figure 8: Precinct Accessibility Overview**


*Source: Google Earth 2014*

# TRAFFIC IMPACTS

Investigations into the traffic impacts associated with the HDBP have been undertaken in consultation with Council and the *RMS*.

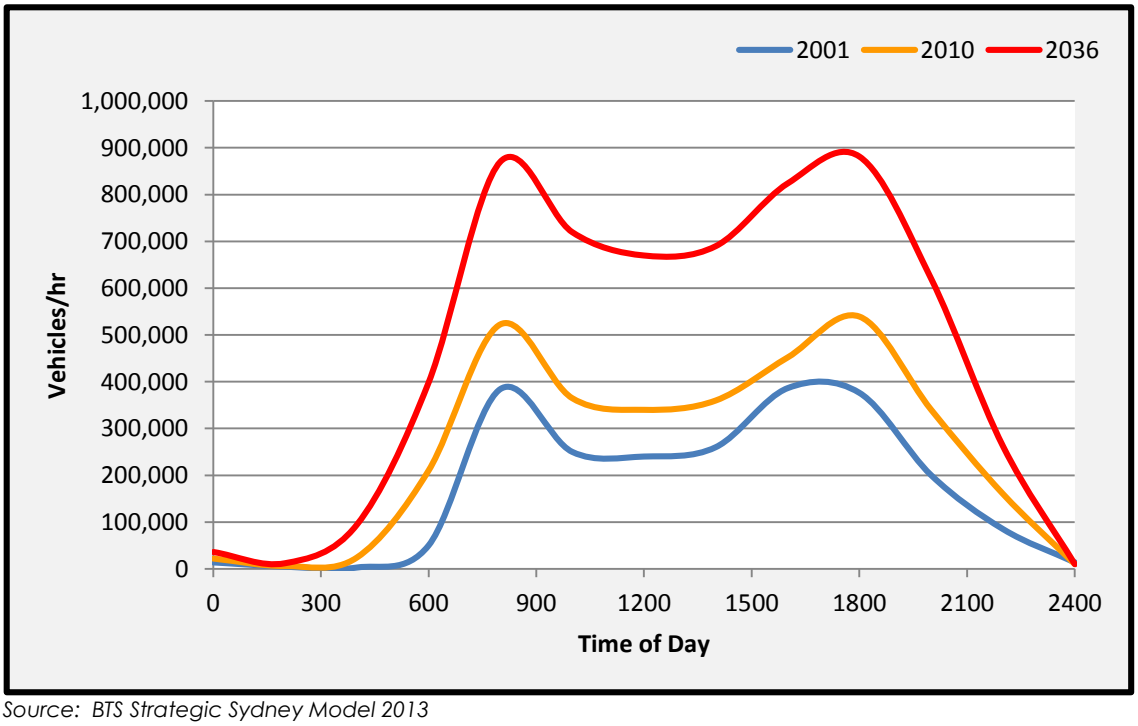
The overall population within the *Fairfield LGA* is reported as 187,766 persons in the 2011 census.

The 2011 Census further reports a workforce of some 68.600, LGA wide.

To align the road network usage with the population and employment and anticipated future occupation of the proposed HDBP, this assessment has adopted the generation associated with the full development of the site. The anticipated vehicle generation from the full occupation of the HDBP is presented in *Table 1*.

With the anticipated population growth within the Fairfield LGA by the year 2036, the projected level of vehicle trips on the Sydney Metropolitan road network, reported from the strategic *RMS* Emme/2 model, by time of day, is presented in *Figure 9*.

**Figure 9: Projected Sydney Region Travel Demand**




*Source: BTS Strategic Sydney Model 2013*

**Table 1: Full Development RMS Traffic Generation Rates**

| Lot | Development Component | Area ($m^2$) | Daily RTA Trip Rate | Peak Hour RTA Trip Rate | Peak Hour Generation (vph) |
|---|---|---|---|---|---|
| 1 | Warehouse Stage 01 | 6,960 | 4/100$m^2$ (GFA) | 0.5/100$m^2$ (GFA) | 35 |
| 1 | Office Stage 01 | 600 | 10/100$m^2$ (GFA) | 2/100$m^2$ (GFA) | 12 |
| 1 | Warehouse Stage 02 | 6,087 | 4/100$m^2$ (GFA) | 0.5/100$m^2$ (GFA) | 31 |
| 1 | Office Stage 02 | 600 | 10/100$m^2$ (GFA) | 2/100$m^2$ (GFA) | 12 |
| 2 | Warehouse Stage 2 | 21,330 | 4/100$m^2$ (GFA) | 0.5/100$m^2$ (GFA) | 107 |
| 2 | Office Stage 2 | 800 | 10/100$m^2$ (GFA) | 2/100$m^2$ (GFA) | 16 |
| 3 | Warehouse Stage 3 | 24,160 | 4/100$m^2$ (GFA) | 0.5/100$m^2$ (GFA) | 121 |
| 3 | Office Stage 3 | 1,000 | 10/100$m^2$ (GFA) | 2/100$m^2$ (GFA) | 20 |
| 4 | Warehouse Stage 3 | 20,055 | 4/100$m^2$ (GFA) | 0.5/100$m^2$ (GFA) | 100 |
| 4 | Office Stage 3 | 1,000 | 10/100$m^2$ (GFA) | 2/100$m^2$ (GFA) | 20 |
| 5/6 | Warehouse | 15,427 | 4/100$m^2$ (GFA) | 0.5/100m2 (GFA) | 78 |
| 5/6 | Dock Office | 116 | 10/100$m^2$ (GFA) | 2/100m2 (GFA) | 3 |
| 5/6 | 2 Story Office | 3,132 | 4/100$m^2$ (GFA) | 2/100m2 (GFA) | 63 |
| | **TOTAL** | | 5,039 | | **618** |

Strategically, government authorities have adopted a generation rate of 15 vehicles per developable hectare per hour, as a broad approach to future warehouse development.

These strategic generation rates are marginally lower than those prescribed in the *RMS*'s publication, '*Guide to Traffic Generating Developments*'.

Given this development must follow the prescribed path of consultation and referral, as outlined in *Schedule 1* of SEPP 11, the trip generation rate adopted for this DA follows the *RMS* guide, as shown in *Table* 2.

**Table 2: Lot 1 RMS Traffic Generation Rates**

| Lot | Development Component | Area ($m^2$) | Daily RMS Trip Rate | AM Peak Hour RMS Trip Rate | Peak Hour Generation (vph) |
|---|---|---|---|---|---|
| 5/6 | Warehouse | 15,427 | 4/100$m^2$ (GFA) | 0.5/100$m^2$ (GFA) | 78 |
| 5/6 | Dock Office | 116 | 10/100$m^2$ (GFA) | 2/100$m^2$ (GFA) | 3 |
| 5/6 | 2 Story Office | 3,132 | 10/100$m^2$ (GFA) | 2/100$m^2$ (GFA) | 63 |
| | **TOTAL** | **18,675** | 942 | | **144** |

*NB: No retail operations are envisaged at the site.*

Based on the *RMS* guide, the development will generate 942 vehicle trips daily, with 288 vehicle trips, including heavy vehicles trips, occurring during the morning and evening commuter peak periods, combined.

Generally, the morning peak hour generation can be split in the ratio 85/15 between inbound and outbound trips respectively, while the evening peak hour trips can be split 15/85, as shown...

- *144 vehicle trips during the morning peak = 122 inbound, 22 outbound, and*
- *144 vehicle trips during the evening peak = 22 inbound, 122 outbound.*

The traffic generation, pertaining to the operational requirements of the development, have been based on the known operational characteristics of comparable facilities.

Passenger car, or commuter trips, will primarily occur during the morning and evening peak periods and constitute some 80% of the development's peak hour generation (115vph).

Site investigations have revealed that during the morning peak 30% of traffic to the site will will originate from the north, along Cowpasture Road while 70% will arrive from the south.

Correspondingly, 30% of traffic leaving the HDBP during the evening peak will travel to the north while 70% will leave to the south.

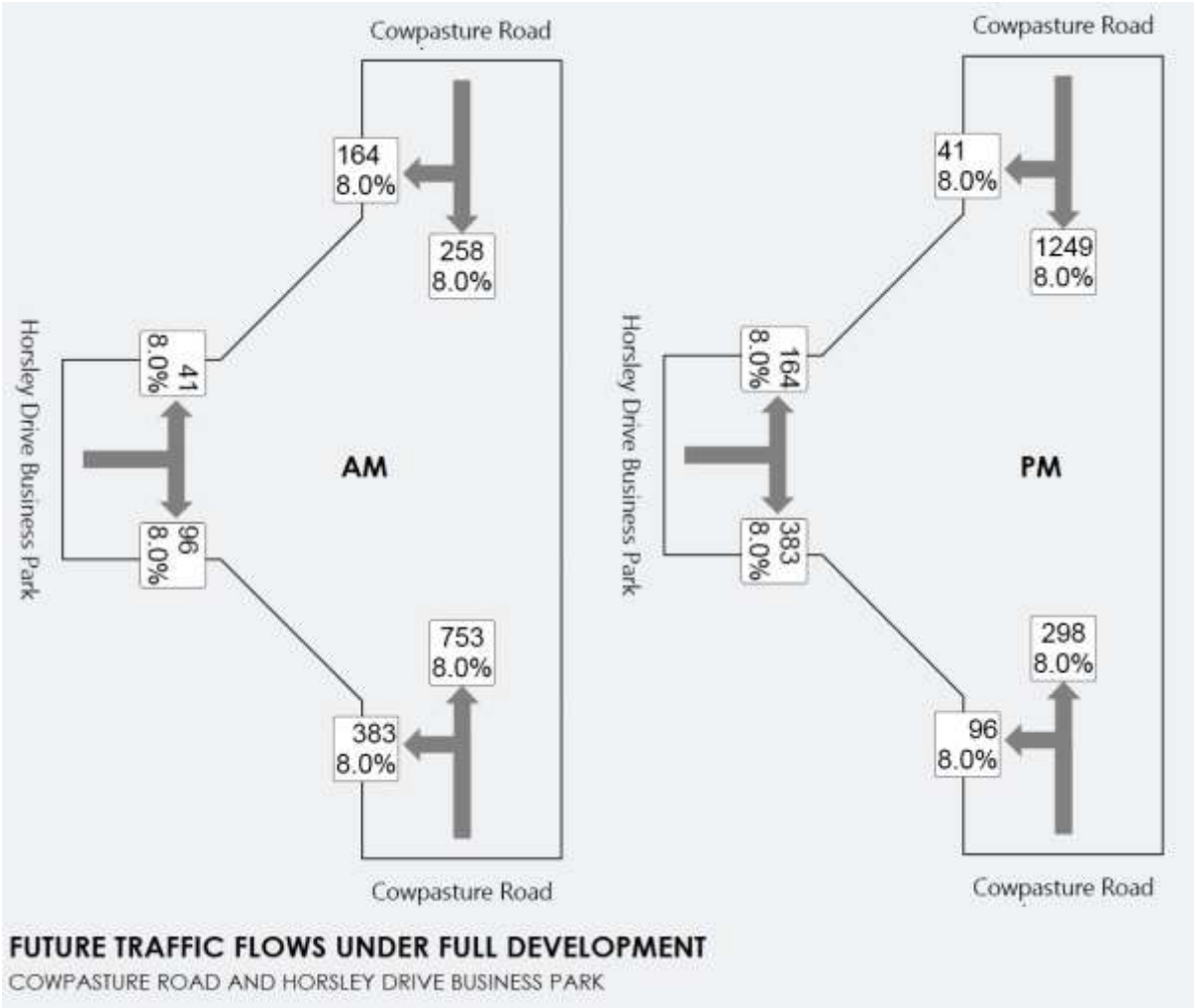
Heavy vehicle movements will predominantly occur during business and off peak hours with only an average of 10% of Class 3 to Class 10 heavy vehicle truck movements envisaged during the morning and evening peaks (15vph, respectively).

The development will generate a total of 144 vehicle trips in the morning peak and a further 144 vehicle trips again during evening, commuter peak period.

Intersection analysis of the access conditions and surrounding road network has been undertaken for the anticipated demand of full site developnment, to adequately accommodate the development within the context of the Wetherill Park Precinct.

The modelled traffic projections for the morning and evening peak commuter periods are presented in *Figure 10*.

**Figure 10: Full HDBP Development AM Peak Projected Volumes**




Detailed operational intersection analyses have been undertaken utilising the computer based program, Sidra, as reported in *Table 3*.

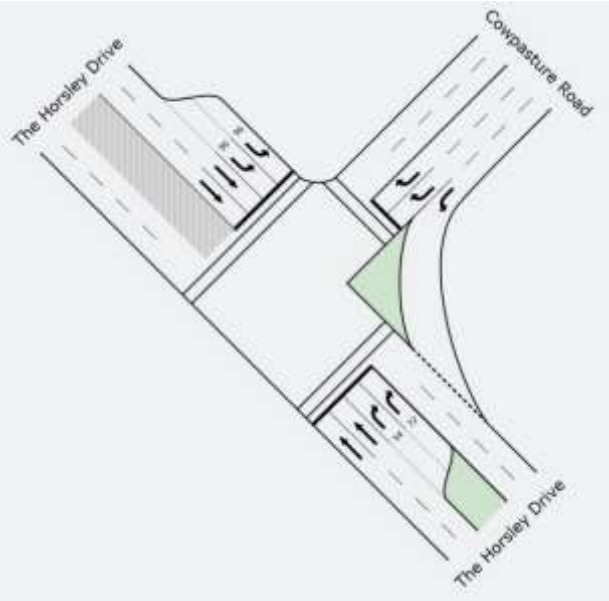
The future operation of the proposed Cowpasture Road access to the HDBP reports a good Level of Service (*LoS*) 'A' during both the morning and evening commuter peak periods generating a 95th percentile queue lengths in Cowpasture of 30m northbound in the AM and 69m southbound in the PM.

The intersections of Cowpasture Road with Newton Road and The Horsley Drive also report satisfactory operation during the morning peak period.

However, the evening peak, when modelled with the total traffic generation projected under full development of the HDBP, suggests…

- *The proposed dual lane circulating roundabout at the intended HDBP access on Cowpasture Road will operate at a good LoS 'A',*
- *The Newton Road intersection with Cowpasture Road, which currently reports oversaturation, will remain oversaturated with the critical movement identified as the left turn from Newton Road onto Cowpasture Road. The oversaturation of the movement results in a 95$^{th}$ percentile queue length of some 343 metres. Currently the intersection reports a queue length of 258 metres,*
- *The Horsley Drive intersection with Cowpasture Road reports a LoS 'D' but with a southbound right turn queue length in Cowpasture Road of 397 metres. Currently, the 95$^{th}$ percentile queue length is in the order of 324 metres. Site observations revealed that the queue clears regularly within two cycles of the traffic signals and develops again over three (3) cycles. This pattern of queue forming was observed to occur over a 40 to 50 minute period during the evening peak, after which time the vehicle demands on the dual lane right turn movement dissipates appreciably.*

**Table 3: Intersection Performance with Full Development of HDBP**

| Cowpasture Road and HDBP | | | | | | Cowpasture Road and Newton Road | | | | | | The Horsley Drive and Cowpasture Road | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
|  | | | | | |  | | | | | |  | | | | | |
| AM | | | PM | | | AM | | | PM | | | AM | | | PM | | |
| DS | AVD (secs) | LoS | DS | AVD (secs) | LoS | DS | AVD (secs) | LoS | DS | AVD (secs) | LoS | DS | AVD (secs) | LoS | DS | AVD (secs) | LoS |
| 0.501 | 8.6 | A | 0.716 | 11.2 | A | 0.538 | 9.4 | A | 1.062 | 27.8 | A | 0.897 | 28.9 | C | 0.942 | 50.7 | D |

*Source: Sidra Intersection modelling, Road Delay Solutions, 2015*

# HEAVY VEHICLE ACCESS

Separate, dedicated, heavy vehicle entry and exit driveways have been designed to accommodate the intended ingress/egress of vehicle classes 1 through 10 (refer to *Figure 5* for vehicle classifications and the section entitled *HEAVY VEHICLE ACCESS in this report*).

Heavy vehicle entry is proposed from the internal roadway running along the northern boundary of the site and thence via a driveway, some 65m west of the proposed roundabout on Cowpasture Road.

Egress is proposed from the hardstand area and driveway, intersecting the cul-de-sac head on the internal access road, some 188m to the west of the proposed roundabout on Cowpasture Road.

The proposed gradients to and from the hardstand aprons to the east and west of the site ensure sufficient undercarriage and overhang clearances when accessing and leaving the site. These movements are performed in a forward direction to and from the carriageway in the correct lanes with no 'straddling' of the adjacent lane.

The heavy vehicle access and internal manoeuvrability has been assessed utilising '*AutoTurn*' and *AUSTROADS Turning Templates* for trucks up to and including Class 10, B-Doubles. The assement found that Class 10 B-Doubles are capable of entering and leaving the site of the proposed warehouse in a forward direction via the entry and exit driveways, respectively.

The heavy vehicle movement capabilities are presented in *Appendix B*.

# PARKING

Passenger vehicle access for the warehouse and offices is via a dedicated layback from Cowpasture Road, with car parking proposed, directly, east of the warehouses.

The associated passenger vehicle parking for the warehouse development is based upon the RMS's document entitled *'Guide to Traffic Generating Developments'*. Under this guideline, the RMS require...

- **Warehouse** 1 space per 300m$^2$ of GFA, and
- **Office** 1 space per 40m$^2$ of GFA.

Concurrently, Fairfield City Council has permitted a reduced rate for both warehouse and office facilities within the HDBP. Should the intended use of the site(s) change in the future, the on-site parking requirements will require further review. The accepted reduced parking rate is...

- **Warehouse** 1 space per 200m$^2$ of GFA, and
- **Office** 1 space per 200m$^2$ of GFA.

**Table 4: Indicative Parking Requirements by Land Use**

| Use | GFA ($m^2$) | RMS Guide | | Council | |
|---|---|---|---|---|---|
| | | *Rate* | *Spaces* | *Rate* | *Spaces* |
| Warehouse | 15,427 | 1/300m$^2$ | 52 | 1/200m$^2$ | 78 |
| Dock Office | 116 | 1/40m$^2$ | 3 | 1/200m$^2$ | 1 |
| 2 Story Office | 3,132 | 1/40m$^2$ | 79 | 1/200m$^2$ | 16 |
| | | | **134** | | **95** |

The parking requirements prescribed by the *RMS* and Council's accepted reduced rate above, are indicative averages of warehouse development across the Metropolitan Area and within Fairfield LGA, respectively. As outlined in the *RMS* guide, the prescribed rates should consider the particular requirements of the intended tenants and nature of business to be conducted.

The proposed warehouse operation is not intended for any direct to public retail operations and 250 parking spaces are proposed.

The parking of articulated heavy vehicles is proposed on the hardstand area adjacent to the north of the warehouse.

The proposed parking allocation is commensurate with the projected traffic generation for the site and is in accordance with both Council and *RMS* guidelines.

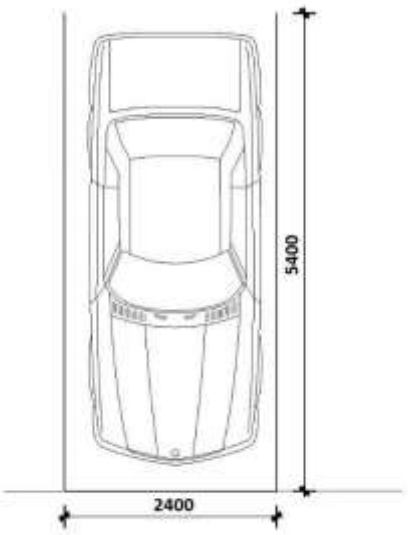
# CAR PARKING DESIGN

Refer to *Figure 2* which presents the proposed development parking layout, designed in accordance with AS2890.1-2004 (or better) and disabled parking in accordance with AS2890.6-2009. The interpretation of the standards employed in the proposed warehouse development are presented below…

- **Aisle Width** – 6.3m
- **Parking Bays** – With the exception of two (2) allocated disabled parking bays, each of the remaining 248 bays is 2.4m wide for employees and visitors with an additional 300mm for those spaces located adjacent to any side walls or obstructions. Each bay is 5.4m deep.
- **Driveway Gradient for User Class 1, 1A or 2 (Long term parking)** – The proposed access for passenger vehicles meets the required sight lines to pedestrian activity within the footway areas and complies with under carriage clearance and overhang requirements.

  The proposed access caters for a sight triangle in excess of 2m by 2.5m upon departure to the road carriageway.
- **Space identification** – In accordance with Figure 3.1 of AS2890.6, each of the two allocated disabled parking bays will be clearly identified.

**Figure 11: Typical Parking Bay Dimensions**



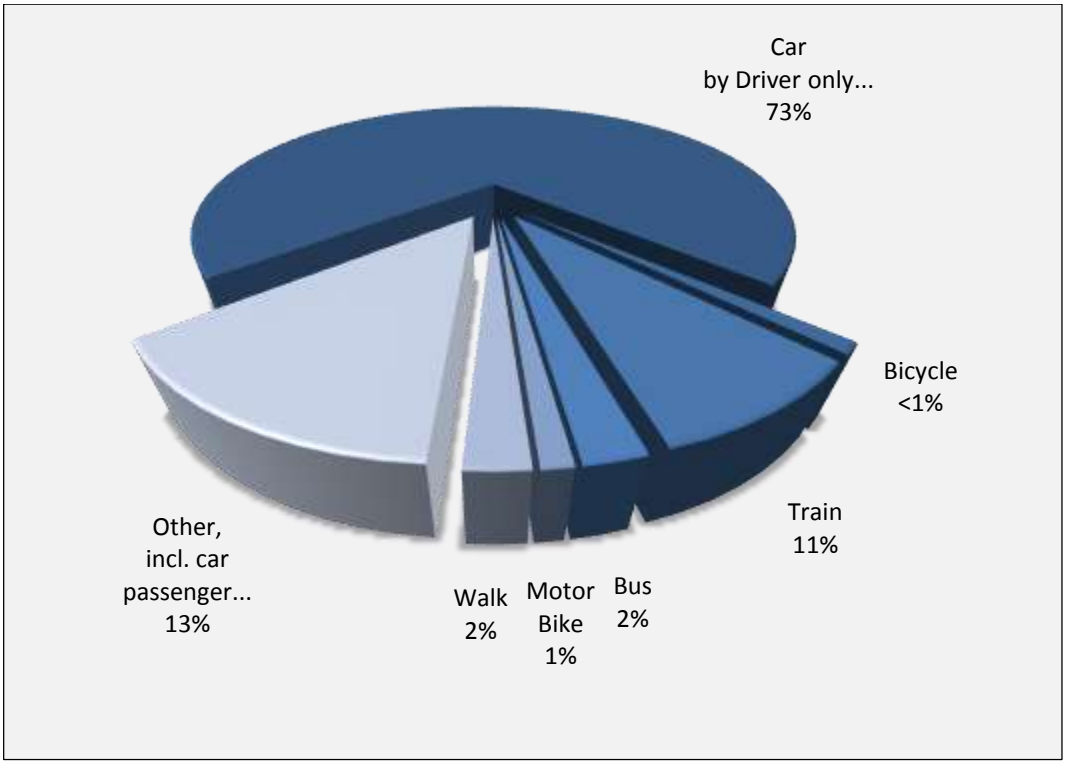
# PUBLIC TRANSPORT

The Metropolitan Strategy, under the auspices of 'Draft SEPP 66 – Integration of Land Use and Transport', prescribes guiding provisions that aim to ensure the urban structure, building forms, land use locations, development design, subdivision and street layouts to help achieve the following planning objectives...

- *Improving accessibility to housing, employment and services by walking, bicycling and public transport,*
- *Improving the choice of transport and reducing the dependancy on private vehicle usage,*
- *Moderating growth in the demand for travel and the distances travelled, especially by car,*
- *Support the efficient and viable operation of public transport services, and*
- *Providing for the efficient movement of freight.*

The provision seeks to influence mode choice made by community and business.

**Figure 12: Fairfield LGA JTW Mode Share – Journey by Single Mode**




*Source: 2011 ABS Census data – 'Basic Community Profile- Fairfield LGA*

Car usage for Journey to Work (JTW) in Western Sydney is greater than compared with the Sydney Metropolitan Area average. The 2011 census data indicates that the overall mode split for the Fairfield LGA is 73% car driver, in the context of a single mode journey. This is, however, an area wide average and must not be taken to apply equally to all local precincts. Previous studies have identified a mode share, attributed to private vehicle usage, up to some 80%.

Public transport accessibility to the HDBP, within the *Western Sydney Parklands*, has been improved and is under further investigation, at this time.

The State Government's is implementing the introduction 300 new buses across the state, which has resulted in 400 new jobs for bus drivers and 150 jobs in bus construction.

The Fairfield Railway Station is located approximately 8 kilometres to the south-east of the site.

Current bus services, Route 814 Westbus, travel to and from Fairfield Railway Station.

The service runs at 20 minutes intervals between 4.30am - 8.30am and 2.30pm - 5.30pm. The service structure is designed to accommodate the commencement and completion of varying shifts during the typical working week within the *Western Sydney Parklands*.

**Figure 13: Bus Services**

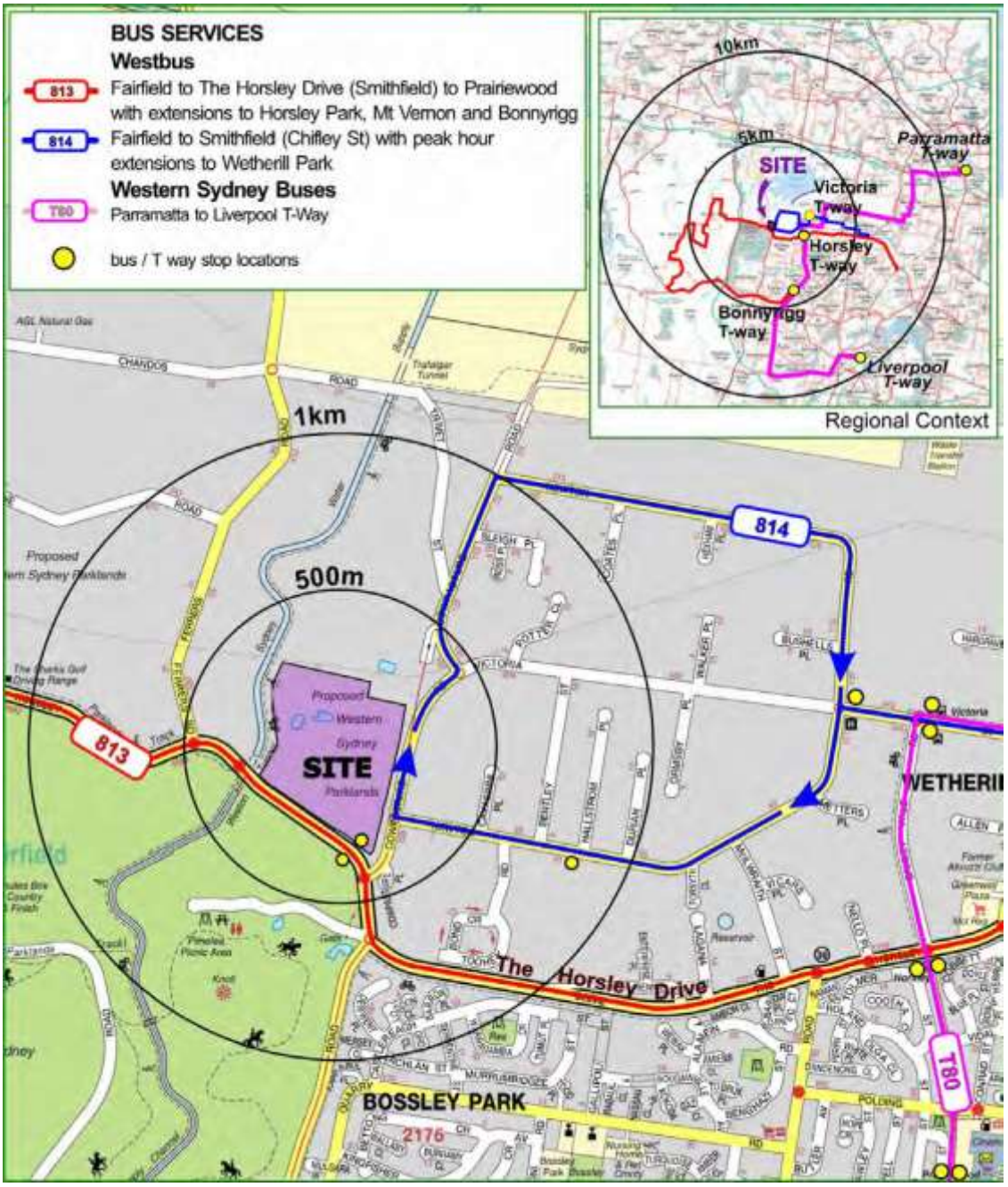
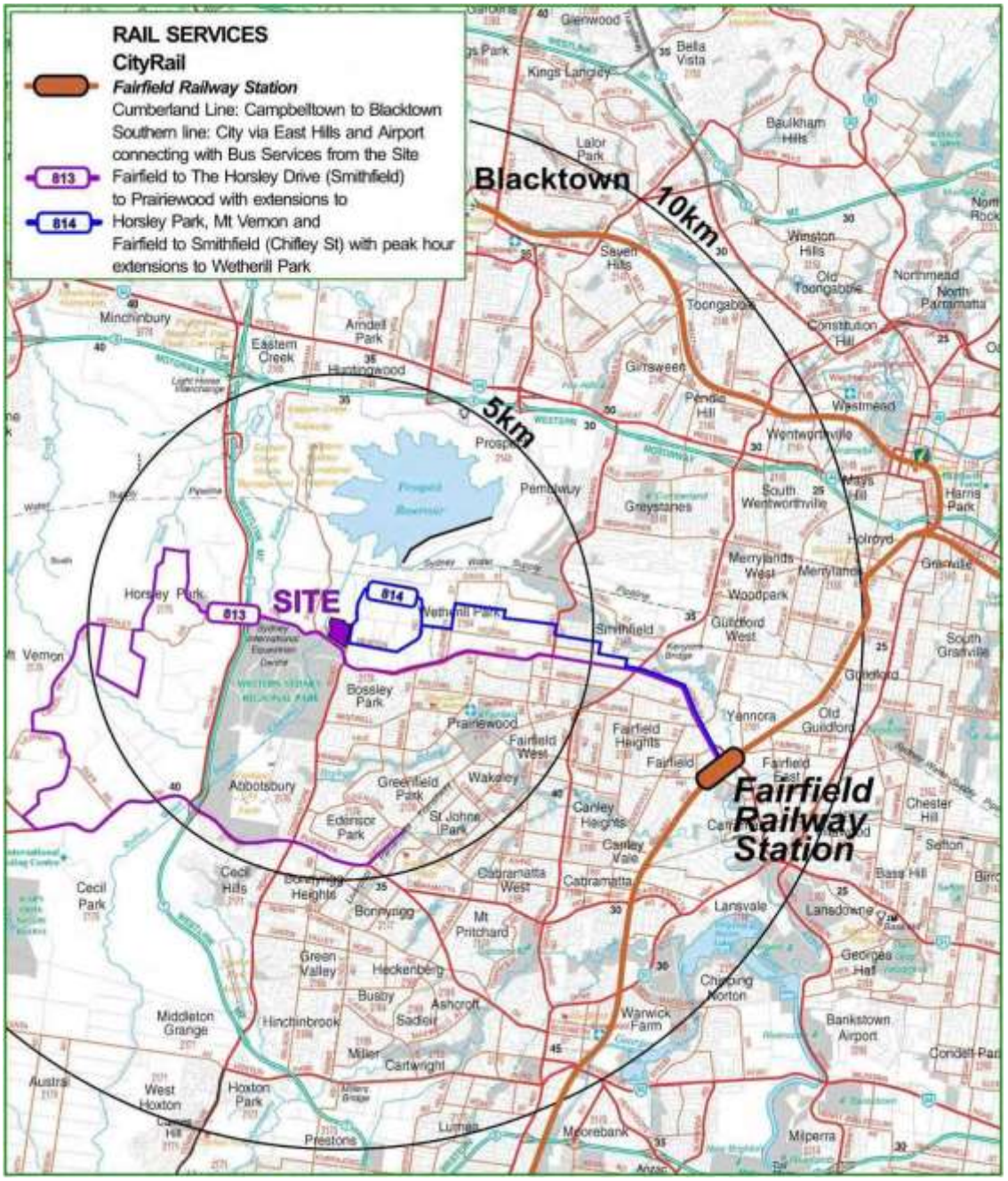


**Figure 14: Rail Services**



# PEDESTRIANS AND CYCLISTS

Under the guidelines prescribed by Fairfield City Council's DCP and the regional bikeplan, all road reserves within the Western Sydney Parklands should provide shared pedestrian and cycle paths within the road footway area. Given the nature of land use through the precinct and the resultant footway widths surrounding the HDBP do not afford sufficient capacity to accommodate shared pedestrian cycle paths.

No provision currently exist on Cowpasture Road and it is considered the formation width of the road carriageways provide no potential for on road bicycle provisions. under the current guidelines.

**Figure 15: Cycleways**

# CONCLUSION

In conclusion, the proposed Lots 5 and 6 within the Horsley Drive Business Park the associated Warehouse and Distribution Facilities, comply with the requirements setout by Fairfield City Council and the *RMS* with regard to traffic generating developments.

This report endorses the Development Application by Australand.

In support, the following issues are considered relevant...

- *The proposed development and its associated traffic generation of 144vph during the morning and evening peak comuter traffic flow periods, will be capably managed on the planned road network within Wetherill Park, as evidenced by the computer based strategic and operational modelling,*
- *The access arrangements, detailed in this report, in juxtaposition with the internal structure of the development site, are capable of accommodating the manouvreabilty and storage of the identified vehicle classifications, including Class 10, B-Doubles, envisaged in the daily operation of the warehouse. The internal structure and design of the development conform with the requirements prescribed in AS 2890.1 - 2004 and AS 2890.6 - 2009, and*
- *The parking provisions proposed meet the requirements prescribed by the RMS and Council's reduced allowance and are considered acceptable in facilitating the proposed warehouse development.*

# APPENDIX A – PERFORMANCE INDICATORS

## General

Intersection performance is best measured by the indicators of Level of Service (LoS), Average Vehicle Delay (AVD) and the Degree of Saturation (DS) during peak hours.

This is defined as the assessment of a qualitative effect of factors influencing vehicle movement through the intersection. Factors such as speed, traffic volume, geometric layout, delay and capacity are qualified and applied to the specific intersection control mode, as shown in Table 1.

The measure of average delay assessed for traffic signal operation is over all movements. For roundabouts and priority controlled intersections, the critical criterion for assessment is the movement with the highest delay per vehicle.

**Table A1: Performance Indicators by Control Method**

| Intersection Control | Performance Measure [Unit] |
|---|---|
| **Sign or Priority Control** | → Delay of critical movement(s) [seconds/vehicle]<br>→ Average Vehicle Delay [seconds/vehicle]<br>→ Queue length of critical movement(s) [metres] |
| **Traffic Signal Control** | → Delay of critical movement(s) [seconds/vehicle]<br>→ Degree of Saturation [ ratio of vehicles to capacity]<br>→ Average Vehicle Delay [seconds/vehicle]<br>→ Cycle Length [seconds]<br>→ Queue length of critical movement(s) [metres] |
| **Roundabout Control** | → Delay of critical movement(s) [seconds/vehicle]<br>→ Degree of Saturation[ ratio of vehicles to capacity]<br>→ Average Vehicle Delay [seconds/vehicle]<br>→ Queue length of critical movement(s) [metres] |

## Average Vehicle Delay (AVD)

The AVD is a measure of the operational performance of a road network or an intersection.

AVD is determined globally over a road network or within a cordon during an assignment model run. The AVD exhibited on comparable network models, for analogous peak periods, forms the basis of comparing the operational performance of the road network.

AVD is used in the determination of intersection Level of Service. Generally, the total delay incurred by vehicles through an intersection is averaged to give an indicative delay on any specific approach. Longer delays do occur but only the average over the peak hour period is reported.

## Degree of Saturation (DS)

The DS of an intersection is usually taken as the highest ratio of traffic volume on an approach to the intersection compared with its theoretical capacity, and is a measure of the utilisation of available green time. The DS reported is generally of a critical movement through the intersection rather than the DS of the intersection unless equal saturation occurs on all approaches.

For intersections controlled by traffic signals, generally both queue length and delay increase rapidly as DS approaches 1.0. An intersection operates satisfactorily when its DS is kept below 0.875. When the DS exceeds 0.9, extensive queues can be expected.

**Table A2: Qualified Level of Service by Control Method**

| LOS | AVD secs | Traffic Signals and Roundabout | Give Way and Stop Sign Priority Control |
|---|---|---|---|
| **A** | 1 to 14 | Good operation. | Good operation |
| **B** | 14 to 28 | Good operation with acceptable delays and spare capacity. | Good operation with acceptable delays and spare capacity. |
| **C** | 28 to 42 | Satisfactory. | Satisfactory but accident study and operational analysis required. |
| **D** | 42 to 56 | Operating near capacity. | Near capacity. Accident study and operational analysis required. |
| **E** | 56 to 70 | Unsatisfactory. Traffic signals incidence will cause excessive delays. Requires additional capacity.<br>Roundabouts require alternative control mode. | At capacity. Requires alternative control mode. |
| **F** | >70 | Unsatisfactory. Over capacity and unstable operation. | Over capacity. Unstable and unsafe operation. |

# APPENDIX B – HEAVY VEHICLE SWEPT MANOUEVRES

**Figure B1: B-Double Turning Paths**

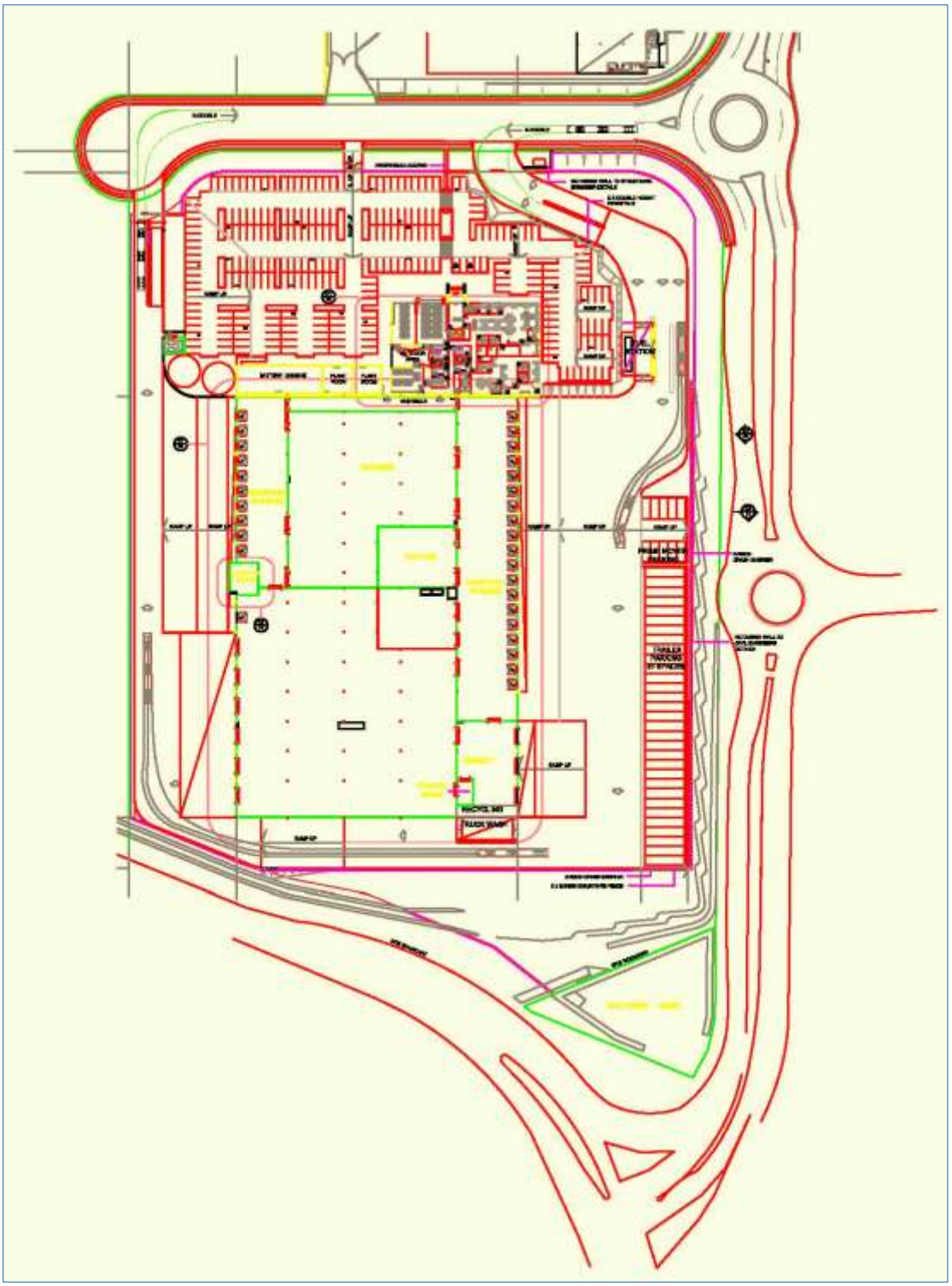


**Figure B2: Dock Access by 19m Articulated Vehicles**

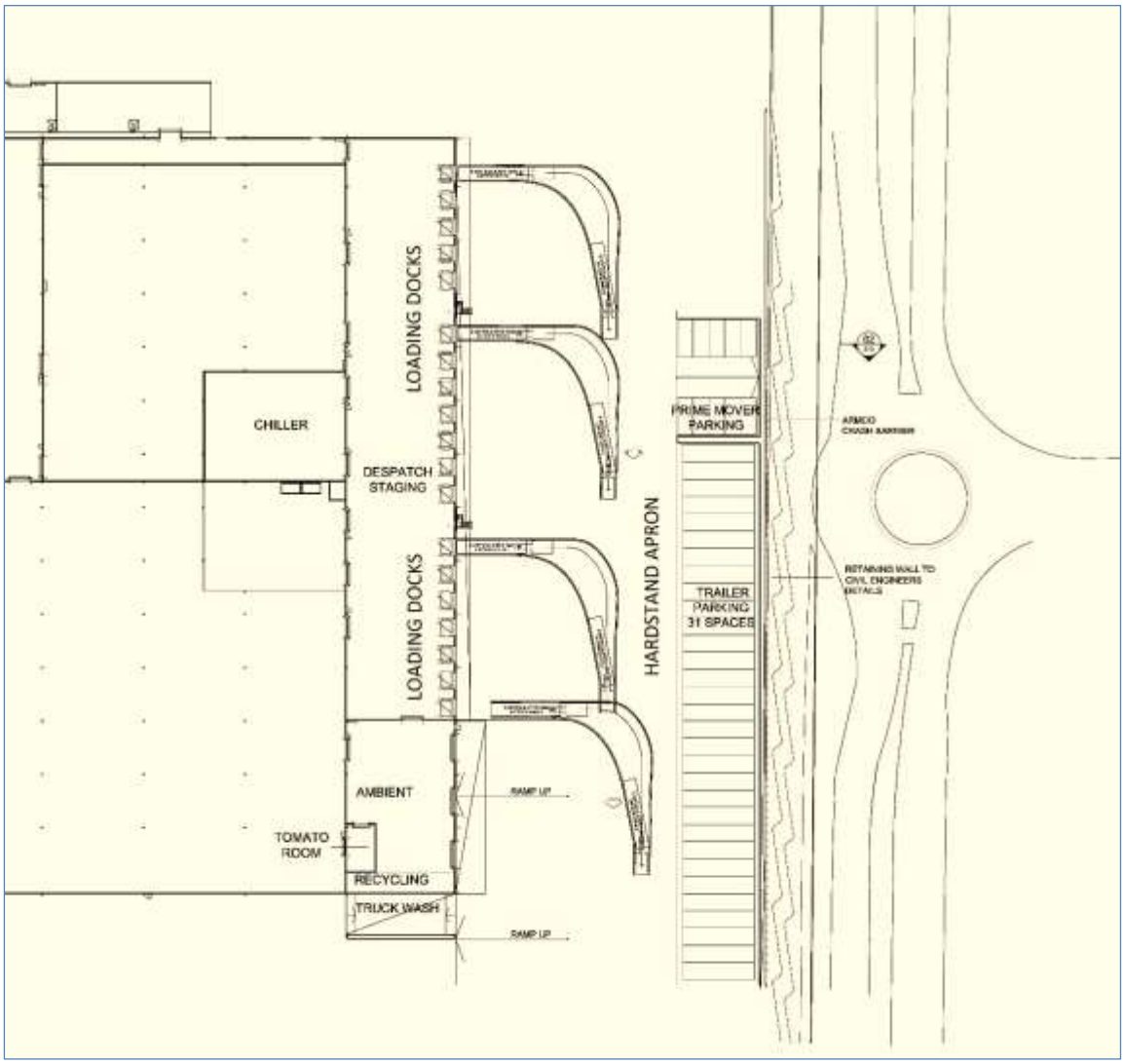
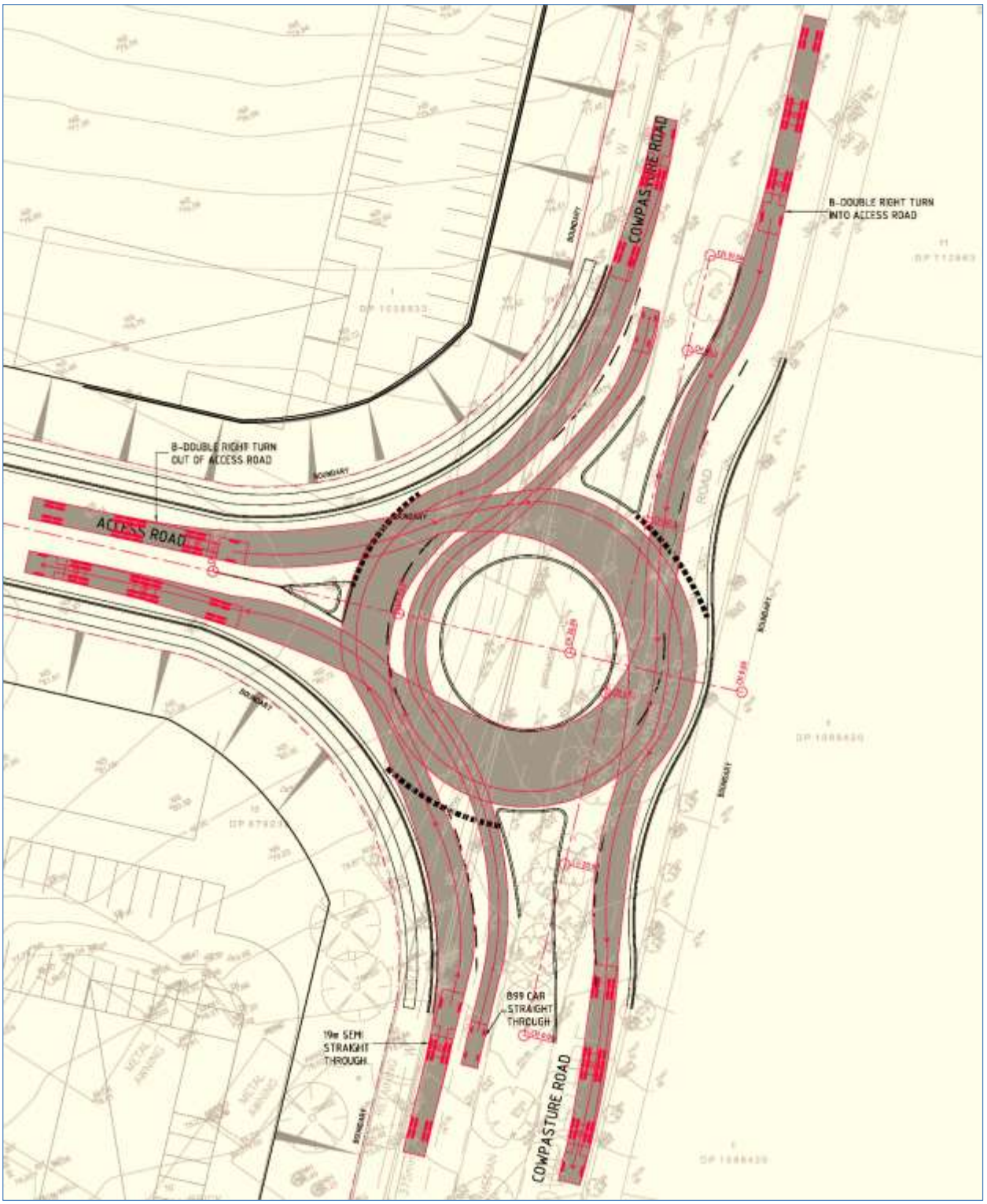


**Figure B3: Roundabout Turning Paths**



# APPENDIX C – SELECT EXTRACTS - REDUCED PARKING RATE

FairfieldCity
Celebrating diversity

Fairfield City Council, Administration Centre, 86 Avoca Road, Wakeley 2176
Tel: (02) 9725 0222 Fax: (02) 9725 4249 ABN: 83 140 439 239
All communications to:
Fairfield City Council, PO Box 21, Fairfield NSW 1860
Email address: mail@fairfieldcity.nsw.gov.au

**In reply please quote:** 12/02624 **Contact:** Andrew Mooney 9725 0214

29 August 2011

Mr Ben Eveleigh
Planner
NSW Department of Planning & Infrastructure
GP0 Box 39
SYDNEY NSW 2001

Dear Mr Eveleigh

HORSLEY DRIVE BUSINESS PARK – SSD 5169 – PUBLIC EXHIBITION OF STATE SIGNIFICANT DEVELOPMENT

I refer to correspondence from the Department dated 6 July 2012 regarding public exhibition of the abovementioned proposal. I advise that Council at its meeting of the 21 August 2012 endorsed the following submission to the proposal.

*That Council advise the Department of Planning and Infrastructure (DP&I) and Western Sydney Parklands Trust that;*

1. *It does not support the establishment of any stand alone commercial (offices, retail) uses in the Business Park aimed at servicing the surrounding residential areas and/or industrial workforce. Any proposed offices should only be associated with an industrial headquarters or be ancillary to industrial development within the Business Park.*

2. *Insufficient information is included in the EIA to demonstrate the proposal complies with:*

   *(a) The Interim Construction Noise Guideline (ICNG) (Department of Environment and Climate Change NSW 2009) and*
   *(b) NSW EPA Contaminated Land Series requirements*

   *The proponent must provide the information detailed in this report on how the proposal complies with these requirements prior to any approval for the proposal being issued by the Department of Planning and Infrastructure.*

3. *A separate approval is required from the Roads and Maritime Service in regards to the proposed signalisation of the Roundabout at Newtown Road and Cowpasture Road including the banning of right turn movements from Newton Road into Cowpasture Road. This process will also require consultation with business owners in Newton Road.*

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- Proposed land farming activities, including, but not limited to, the location of stockpiles, odour control measures to be employed, measures to prevent off-site migration of contaminated soils, etc.

**TRAFFIC**

**Parking Requirements:**

Council's DCP requires one (1) space per 80m2 for Warehouse uses. The Roads and Maritime Services' Guide to Traffic generating Development specifies 1 space per 300m2 for Warehouse. For the proposed development, a rate of 1 space per 200m2 has been proposed. The applicant has argued the rate of 1 space per 200m2 has been adopted in other industrial precinct subdivisions within the Western Sydney Employment Area (WSEA) including areas within the Fairfield Council LGA.

Based on Council's parking requirement, the number of parking spaces required for the development is 1,193 and based on the RMS' requirement is 318. The number of parking spaces proposed is 477. The shortfall in number of parking spaces proposed, based on Council's parking requirement is 716. When compared with RMS requirement, the number of parking spaces provided will be in excess of 159 spaces. The number of parking spaces provided for the use of Warehouse is considered sufficient.

If the applicant proposes change of use in the future, the adequacy of parking needs to be reviewed. This would also need to take into account the provision of any office space component associated with the business park.

**Network Analysis**

The estimated traffic generation and development yield were included to the existing traffic generation and the proposed development was modelled using Paramics Model. The access to the development was proposed from the existing roundabout at the intersection of Cowpasture Road and Newton Road. Different options were applied to the network to assess the benefits. The preferred option was signalisation of the existing roundabout controlled intersection of Cowpasture Road with Newton Road.

As the existing network operates with limited spare capacity due to the interaction of the signalised intersection and roundabout controlled intersection of The Horsley Drive and Cowpasture Road, there is an inability to coordinate major movements at these intersections and this results in considerable delays and queues on some approaches. The signalisation of the existing roundabout controlled intersection of Cowpasture Road, will result in improved traffic flow. The signalisation of the roundabout will result in banning of right turn movements from Newton Road to travel north along Cowpasture Road toward Ferrers Road and onto Blacktown. Whilst this has potential to create

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inconvenience for some of the businesses in Newton Road, there will still be an option for businesses to use an alternative route (via Victoria Street) to travel north along Cowpasture Road.

Ultimately, the Roads and Maritime Service is the consent authority for the proposed signalisation of the roundabout and any proposal to undertake this measure should also include consultation with the business owners in Newton Road so that they are aware of the issue and alternative route.

In light of the above, the following recommendations are provided;

- The number of parking spaces provided for the use of Warehouse is considered sufficient. If the applicant proposes change of use in the future, the adequacy of parking needs to be reviewed.

- A separate approval is required from the Roads and Maritime Service in regards to the proposed signalisation of the Roundabout at Newtown Road and Cowpasture Road including the banning of right turn movements from Newton Road into Cowpasture Road. This process will also require consultation with business owners in Newton Road.

SUBDIVISION ISSUES

Upon completion of the construction for the works proposed under the proposal, the Trust will seek to transfer ownership and ongoing maintenance of the access road to Fairfield City Council.

The applicant's intention is to limit retaining walls through landscaped batters and fitting of pads to external contours and the proposed access road levels. Retaining walls are proposed to be up to 4m in height. Proposed embankment stability permanent batters slopes in clay will be no steeper than 4 horizontal to 1.

The applicant stated that the proposed earthworks will require, "Smoothing of contours to provide a transition across the site and to facilitate access through the proposed internal estate layout". However, given that the differences between existing and future levels and the falls over the existing site, large amounts of cut and fill is proposed, (11m of fill at some points).

In regards to the subdivision of the site, the proposed development is for a 12 lot industrial lease-hold estate with an additional service lot and access road. A subdivision layout has been provided, but with no clear indication as to the proposed type of subdivision. It is anticipated that future subdivision of the site would need to be Torrens Title as this is the existing system of subdivision applying to the development site.

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